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EXAMINER	
SHEW, JOHN	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/735,941	COUILLARD, BRUNO	
	Examiner	Art Unit	
	John L Shew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/17/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *29 and 31-33* is/are allowed.

6)☒ Claim(s) *1-6,21,22, 24-26 and 28* is/are rejected.

7)☒ Claim(s) *7-20,23,27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 112

1. Claims 1, 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 limitation f) cites "determining synchronization data in dependence upon round trip delay of the packets and in dependence upon variance in temporal spacing of received packets relative to the predetermined temporal spacing, the synchronization data relating to an estimate of minimum travel time of a packet between the time service and the client station via a communications network having unknown transmission time variations that are significant relative to the minimum travel time". The limitation descriptors of "relative to the predetermined temporal spacing" and "significant relative to the minimum travel time" is deemed new matter. The specification does not disclose

the use of "relative" nor "significant relative". Therefore it cannot be determined the range of values to which the terms apply.

Claim 21 limitation f) cites "determining data in dependence upon round trip delay of the packets and variance in packet spacing and comparing the data to threshold values, the data relating to an estimate of a minimum travel time of a packet between the first node and the second node via a communications network having unknown transmission time variations that are significant relative to the minimum travel time". The limitation descriptor of "significant relative to the minimum travel time" is deemed new matter. The specification does not disclose the use of "significant relative". Therefore it cannot be determined the range of values to which the terms apply.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 6, are rejected under 35 U.S.C. 102(e) as being anticipated by Garofalo et al.

Claim 1, Garofalo teaches a method of synchronizing a timing device of a client station equated to a second node of a communications network and processing means (FIG. 2) referenced by clock H of satellite SAT, comprising the steps of sending a plurality of packets each packet being sent at a predetermined time and having a predetermined temporal spacing from other packets (FIG. 3) referenced by TDMA bursts at fixed time intervals of 1 ms with time spacing +delta, from a time server equated to a first node and processing means (FIG. 2, column 1 lines 66-67, column 2 lines 1-3) referenced by ground station MS, to a client station via a communications network (FIG. 2) referenced by satellite client station SAT, having unknown transmission time variations (column 7 lines 14-16) referenced by transmission time corrections which are variations of unknown transmission times,

receiving the plurality of packets at the client station (column 2 lines 24-31) referenced by reception of bursts by first remote system represented by the satellite, determining a time indicative of a local time of receipt of each packet of the plurality of packets at the client station and storing time data in dependence thereon (FIG. 2, column 4 lines 62-67) referenced by satellite onboard module SMOD verifying the arrival time of the packet burst, returning the plurality of packets to the time server via the communications network (column 5 lines 14-19) referenced by ground terminal receiving a packet burst, determining a time indicative of a local time of receipt of each packet of the plurality of packets at the time server (column 6 lines 3-11) referenced by evaluation of propagation

delay by the ground station which implicitly requires a local time of receipt, determining synchronization data in dependence upon round trip delay of the packets and in dependence upon variance in temporal spacing of received packets (column 4 lines 57-67, column 5 lines 1-10) referenced by using the packet propagation delay after a few iterative loops to determine transmission adjustment by shifting transmission of the packets with respect to the reference clock, relative to the predetermined temporal spacing (FIG. 3) referenced by time shift +delta, the synchronization data relating to an estimate of a minimum travel time of a packet between the time server and the client station (column 7 lines 20-31) referenced by the round trip time compensating the Doppler effect which relates to an estimate of the minimum travel time, via a communications network having unknown transmission time variations (column 7 lines 14-16) referenced by transmission time corrections which are variations of unknown transmission times.

Claim 4, Garofalo teaches the plurality of packets are sent at predetermined times such that temporal spacing between consecutive packets are a same (FIG. 3) referenced by TDMA bursts with 1ms interval per burst.

Claim 6, Garofalo teaches the time server sends a plurality of packets, each packet being sent at a predetermined time (FIG. 3) referenced by the TDMA burst of 1ms per burst, to each of a plurality of client stations via the communications network (FIG. 1,

column 2 lines 11-13) referenced by the synchronization of two or more ground stations with each other.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 3, 5, 21, 22, 24, 25, 26, 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Garofalo as applied to claims 1, 4 and 6 above, in view of Inukai.

Claims 2, 3, 5, 21, 22, 24, 25, Garofalo teaches a method of synchronizing a reference clock of a ground station and a clock of a remote system. Garofalo does not teach threshold values in the synchronization calculation nor sending a corrective time signal to the client station. Inukai teaches comparing the synchronization data to threshold values (column 15 lines 58-61) referenced by comparison of error should not exceed lower threshold Y_{min} nor upper threshold Y_{max}, determining data indicative of a time correction if the determined data are within the threshold values (column 15 lines 61-66) referenced by the termination of the correction interval and start of next interval implies only calculation of values within the threshold range will be used, sending a signal

comprising the data indicative of a time correction from the time server to the client station (FIG. 10) referenced by the Clock Correction Data from the ground based clock to the onboard satellite clock, repeating the data determination steps a) to f) if the data are not within the threshold values (column 15 lines 64-66) referenced by the immediate termination of the current correction interval and the start of a new correction interval. Garofalo teaches the first node is a client station and the second node is a time server (FIG. 2, column 7 lines 40-53) referenced by MS1 and MS2 either of which can provide time server functions.

Inukai teaches receiving the signal comprising the data indicative of a time correction at the client station (FIG. 10, column 17 lines 16-28) referenced by the Clock Correction Data to the satellite client station, synchronizing the timing device of the client station in dependence upon the received signal (column 9 lines 3-7) referenced by the clock correction of communication satellite.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate threshold detection as taught by Inukai to the clock synchronization of Garofalo for the purpose of an improved clock correction technique.

Claim 26, Garofalo teaches a method of synchronizing a timing device coupled to a communication network wherein the first node is a client station and the second node is another client station (column 2 lines 14-17) referenced by the synchronization of two satellites each being a client station.

Claim 28, Garofalo teaches steps a) to e) are processed in real time (column 4 lines 38-43) referenced by employing a closed loop synchronization process to enable real time synchronization of the clocks.

Allowable Subject Matter

3. Claims 29, 31-33 are allowed.

Claims 7-20, 23, 25, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

On further review of the proposed amendments, the amendment of claims 1 and 21 with the limitation "a communications network having unknown transmission time variations" does not preclude the reference patent 6633590. Garofalo disclosure of a method of clock synchrononization via a satellite communications network carries the limitation of unknown transmission time variations since the transmission time between the ground station and the satellite is not known with absolute certainty.

The amendment of claim 1 with limitation "unknown transmission time variations that are significant relative to the minimum travel time" is considered new matter as the disclosure does not describe the terms "significant relative" with respect to the invention. It cannot be determined the value range to which these terms limit the minimum travel time.

Applicant's argument over rejection of claim 2 has been fully considered but they are not persuasive.

Regarding the argument traversing the rejection of Claim 2, Inukai does teach a curve fitting polynomial function. Further he teaches round trip propagation time in addition to the sample smoothing interval (column 5 lines 8-14). The Y_{min} and Y_{max} threshold values determine the clock correction time based on phase error linked to the transmission delay (column 16 lines 35-40). Garofalo teaches time shift correction by packet trip delays (column 5 lines 14-19). It is obvious to incorporate the method of Inukai which used predictive curve fitting to the synchronization of Garofalo to predict the clock drift for improved correction.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John L Shew whose telephone number is 571-272-3137. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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